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THE CANNON-BALL TREE

THE MONKEY-POTS

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LIST OF BOTANICAL LEAFLETS ISSUED TO DATE

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D. C. DAVIES
DIRECTOR

FIELD MUSEUM OF NATURAL HISTORY
CHICAGO, U.S.A.

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Photograph by Mr. H. Lang

Figure 1

FRUITS OF THE CANNON-BALL TREE

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FIELD MUSEUM OF NATURAL HISTORY
DEPARTMENT OF BOTANY
CHICAGO, 1924

LEAFLET NUMBER 6

THE CANNON-BALL TREE

The Cannon-ball tree[1] is one of the most curious of the many remarkable forest trees of the South American tropics. In general aspect and habit of growth it bears some resemblance to a large elm, though with larger leaves massed at the tips of the slender twigs. It is, however, distinguished from all other trees by the tangle of crooked branches which surround the lower part of its trunk. In the flowering and fruiting state it is an extraordinary sight.

The foliage is borne mostly overhead by the ascending limbs which reach toward the light. The lower leafless branches, bent and curved in many directions, terminate in clusters of buds and showy flowers and are in addition usually laden with large globular fruits. It is the size and appearance of the fruits that have given to the tree its common name. Indeed, they can best be described by comparing them to rusty cannon-balls. The ground around the base of the tree is generally littered with fallen fruits and their remains in various stages of decay. These give off an unmistakable corpse-like odor, which on closer acquaintance with this tree is found to be characteristic also of the freshly cut wood.

The flowers are unusual in shape and appear at first sight to be somewhat orchid-like, though too large and too brilliantly hued to sustain the resemblance on closer inspection. Their fleshy petals are salmon pink to crimson madder in color on the inner surface,

1. *Couroupita guianensis* Aubl.

white with a dash of yellow on the outside. The peculiar and characteristic feature of the flower is seen to be a curved, hood-like structure, glistening white, terminating in a pink-tinted fringe. It is an extension of the fleshy disk which bears the stamens, and functions as an annex or auxiliary to it. Several hundred small stamens are closely set on the disk surrounding the low pistil; as many more, somewhat larger ones, are borne on the inner surface of the tip of this recurved hood overhanging the others. The large black bumble-bees that visit the flowers force their way under the tip of the hood, between the two sets of stamens, and become thoroughly dusted with pollen.

The flowering of the cannon-ball tree is said to be almost continuous, but in Guiana an abundance of flowers is found early in the year when the fruits on the tree measure six to eight inches in diameter. These are the fruits of the preceding year, which, requiring some eighteen months to ripen, remain on the tree till the new crop of fruit is well advanced.

The old fruits have a rough, leathery exterior covering a thin woody shell. This is filled with a juicy pulp in which the seeds are imbedded. The fresh pulp is stated in some botanical works to be of an agreeable flavor and is said (in spite of the odor) to be used by the natives for a cooling medicinal drink. The seeds are not considered edible.

J. E. Warren, in a book on "Pará, or Scenes and Adventures on the Banks of the Amazon", quotes a French writer on the tropics who speaks of this tree. After describing the tranquility of the streams, the soft murmurs with which they trickle through the grass, the verdure with which they endow the plants, this eloquent author continues: "But when the silence of nature is broken by these violent hurricanes, which too often in the torrid zone blast all the hopes of the

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Photograph by Mr. H. Lang

Figure 2

A CANNON-BALL TREE

IN THE BOTANIC GARDENS, GEORGETOWN, B. G.

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Figure 3

A FLOWER OF THE CANNON-BALL TREE

cultivator, you may hear the report of the fruit of the cannon-ball tree, whose bursting produces an oft-repeated echo, and resembles the rolling fire of a discharge of artillery." On the strength of the name the vivid imagination of the writer ascribes the qualities of ordnance in action to the fruit of this mock munitions tree.

The peculiar position of the flowers around the lower part of the trunk is characteristic of many other tropical forest trees, among these the related Anchovy Pear[2] and the well-known Cacao tree[3]. In both of these the flowers spring directly from buds formed by the deeper layers of the bark. In the cannon-ball tree, branches which have no direct connection with the wood of the tree grow out from the bark and, increasing in length, bear the flowers from year to year, for many years. Distinct as these are from the foliage branches, it happens occasionally that one of the fruiting limbs also puts forth leaves.

The cannon-ball tree was first described by the pioneer botanist Aublet in French Guiana. It grows, however, in the other Guianas also, in fact, in places over the entire northern part of South America from Brazil to Central America and in the lesser Antilles. More than half a dozen species are recognized. A single tree of this kind exists in the United States, having been planted at Fort Meyers, Florida, where it grows outside of the tropics better than might be expected.

THE BRAZIL-NUT TREES.

The hard-shelled triangular seeds known as Pará or Brazil-nuts are produced by trees nearly related to the cannon-ball tree. The Brazil-nut trees[4] are among

2. *Grias cauliflora* L.
3. *Theobroma Cacao* L.
4. Two species, *Bertholletia excelsa* H.B.K. and *B. nobilis* Miers.

the giants of the South American forest. Raising their convex crowns to a height of sometimes a hundred and fifty feet or more, they tower over the surrounding vegetation of the riverbanks. Their thick cylindrical stems are straight and barely taper for seventy to a hundred feet from the ground, at which height the branches begin to spread.

The fruits of the Brazil-nut trees resemble cannon-ball fruits of small to medium size, but have a much thicker woody shell. Each fruit contains from fifteen to twenty-four closely packed seeds ("nuts"). Unlike the cannon-ball fruits they grow in a more ordinary manner on the smaller branches in the lofty top of the trees. Richard Spruce, the botanist of the Amazon, met an old gentleman, Don Diego, who remembered Humboldt and Bonpland and recounted their difficulty in procuring the flowers of the Juvia[5] or Brazil-nut tree, for which they offered an ounce of gold. The fruits can be collected only when they fall to the ground on ripening. Although the cannon-ball fruit, in spite of the name, never functions as a projectile, the Brazil-nut fruits, are dreaded as bombs. Their weight is not inconsiderable and the momentum acquired by them as they drop is so great that the fruit becomes imbedded in the ground.

The collecting of Brazil-nuts is performed mostly by Indians, who at the proper seasons make their way in canoes up the rivers on the banks of which these trees grow. On account of falling fruits the work is somewhat hazardous, but to protect themselves the collectors wrap their heads with skins of the common howler monkey or provide themselves with wooden bucklers which they hold over their heads while gathering the fallen fruits and digging them from the

5. The name by which these trees are known on the Orinoco. The Brazilians call them "Castanheiras" or chestnut trees, the seeds "Castanhas" or chestnuts.

ground. The extremely hard shell of the fruit yields to a few blows of an ax and the nuts are gathered into baskets with which the canoes are filled.

The large rodents of the region are able to open the fallen fruits by means of their powerful incisor teeth, especially after decay has partly softened the shell. The larger monkeys, who are also fond of the seeds, are said sometimes to seize the favorable moment to drive the rodents away and to snatch the coveted contents for themselves.

The Brazil-nut trees, of which two species are recognized, grow in Guiana, in Venezuela and in Brazil. Most of the nuts which appear in the northern markets come from the Amazon region above the Rio Negro, and are sent to Pará. Since the decline of the South American rubber industry they form perhaps the most important article of export of this city on the Equator.

THE MONKEY POTS.

Both of the trees described above belong botanically to the family of the monkey pots.[6] which has many other representatives in the South American rain-forest region. The name monkey pots has reference to the characteristic shape of the fruit, which is like a vase or small urn with the opening neatly closed by a lid. The seeds are packed within these containers, more or less after the manner of Brazil-nuts. There are many species of monkey pot trees and bushes, differing from each other in the particular size and configuration of their fruits as well as in various other respects.

The best known of all is the Great Monkey Pot Tree[7] which in size is second only to the Brazil-nut

6. (*Lecythidaceæ*, from the Greek λήκυθος, oil-vase).

7. *Lecythis grandiflora* Aubl. The Brazilian name for the tree is "castanheira de macaco", monkey chestnut tree.

trees. Its fruits measure six to seven inches in diameter. The lid closing this seed pot becomes detached at maturity while the fruits still hang on the trees, affording a feast for parrots and monkeys who fight over the seeds. "The battle-cry of both of these animals then resounds far and wide in the forest", says the botanist-traveler Avé-Lallemant. The seeds are called monkey chestnuts.

The most important of the other species of monkey pots are the Sapucaya[8] trees, yielding the "nuts" known by this name, which are occasionally to be seen in our northern fruit-shops. They are never as abundant as Brazil-nuts, largely for the reason that the falling fruits become scattered on the ground and therefore are not easily obtained in large quantities. The native collector, besides, must compete with rodents and peccaries and with boring beetles.

A flowering branch of a Guiana tree of the monkey pot family is shown in figure 5.

The fruits of other members of the family are known as monkey's drinking cups, monkey pipe, water case, etc. The bark and bast of some is used for cordage and caulking material. At least one species[9] furnishes a common substitute for cigarette paper.

A story, for the truth of which only one well familiar with the behavior of wild monkeys could vouch, relates to the use alleged to be made of such fruits for the capture of these animals. Being inordinately fond of the nuts of some monkey pots, monkeys will readily insert the hand into an open fruit used as bait. Being also greedy by nature, they will, if at all apprehensive of disturbance, quickly seize the largest possible handful, in fact, too many nuts to ex-

8. *Lecythis Amazonii* Mart. and several other species.
9. *Eschweilera corrugata* Miers, the so-called hill variety of "Kakeralli", or "Wena" of British Guiana.

BARRINGTONIA FRUITS | BRAZIL "NUTS" AND FRUIT | SAPUCAYA "NUTS" AND FRUIT | SMALLER MONKEY-POTS

FRUITS OF THE MONKEY-POT FAMILY

Figure 4

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Figure 5

GUSTAVIA

(*Gustavia augusta*)

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tract at one time through the orifice of the fruit. Unwilling even in the face of danger to release their hold they become victims of their stubborn greed and are easily captured.

RELATIVES IN THE EASTERN TROPICS.

Other members of this tropical family are found in the eastern hemisphere. These are mostly smaller trees and differ widely from any already mentioned. Their fruits and flowers would scarcely be recognized as related to the monkey-pots by those uninitiated into the mysteries of botanical classification or familiar only with the western forms. The principal ones are the African *Napoleana,* Emperor Napoleon's flower, of the Niger and adjacent country, and the Barringtonias of the Indo-Malayan region.

Of the latter there are many species, scattered over a wide area extending from East Africa and India, over the islands of the East Indian Archipelago and of Oceanica, even to Australia. The one figured here is typical. It grows in the river-forests of the Moluccas. Floating Barringtonia fruits are familiar objects of the tidal drift in the oriental tropics. They are pyramidal in shape, with four bulging faces and rounded edges, of a tan-colored leathery exterior, and light as cork. The single large seed within begins to germinate early and is usually in an advanced stage of development when the fruit floats out to sea. The ground-up seedlings thrown in the water serve the natives as fish-poison.

The flowers of this Barringtonia are beautiful but short-lived. Their four white petals and numerous long madder-tipped stamens are displayed only at night, dropping with the advent of daylight.

B. E. DAHLGREN.

A trunk of a Cannon-ball tree, obtained in British Guiana by the Stanley Field Guiana expedition of 1922, is exhibited in the Hall of Plant Life, Hall 29 on the second floor east.

This bearing trunk has been restored to life-like appearance, with the perishable parts reproduced in durable form, through the generosity of Mr. Stanley Field.

A case containing other fruits of the Monkey pot Family, Brazil-nuts, Sapucaya nuts, etc., together with a branch of a Barringtonia, is also to be found in Hall 29.

Figure 6

FLOWER AND YOUNG FRUIT OF A BARRINGTONIA

(*Barringtonia speciosa*)

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